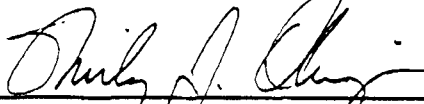




Office of River Protection Site Action Plan

Commitment 23, Work Planning and Control
DNFSB Recommendation 2004-1


for Approved, Roy J. Schepens, Manager
Office of River Protection

NOTE: Change Control for this Site Action Plan resides with the Field Office Manager (or designee), with a cc: to EM-3.2.

Executive Summary

Evaluation Process

The U.S. Department of Energy (DOE), Office of River Protection (ORP) conducted work planning and control assessments in response to Commitment #23 of the DOE's Implementation Plan for Defense Nuclear Facilities Safety Board Recommendation 2004-1, "Oversight of Complex, High-Hazard Nuclear Operations." ORP conducted these assessments in accordance with the instructions provided in the November 18, 2005 DOE Environmental Management (EM) memorandum, Chief Operating Officer for Environmental Management to Distribution, "Work Planning and Work Control Assessments and Site Action Plans for Defense Nuclear Facilities Safety Board Recommendation 2004-1, Commitment 23," dated November 18, 2005. Specific direction was provided to perform a review of the DOE field office and contractors in the area of work planning and work control (WP&C). The assessment teams determined that a combination of existing assessment data and conduct of new assessments would be required to fully evaluate all WP&C processes used by ORP and ORP prime contractors.

WP&C oversight of the Hanford Tank Waste Treatment and Immobilization Plant (WTP) project was evaluated by two experienced DOE project management and field oversight personnel using the criteria review and approach documents (CRADs) in the EM memorandum. The team performed the assessment in December, 2005. The ORP Tank Farm Operations Division used the EM Line Management Oversight Assessment Report and a Facility Representative Self-Assessment Report to fulfill the EM CRADs for WP&C oversight.

In December, 2005, a team comprised of four Washington Safety Management Solutions (WSMS) consultants, two Bechtel National, Inc. (BNI) personnel, and two ORP personnel completed a thorough WP&C assessment of the WTP project using the EM CRADs. The assessment focus areas were also derived from the CRADs in the DOE-HDBK-3027-99, *Integrated Safety Management Systems (ISMS) Verification Team Leader's Handbook*, and were compared with National Nuclear Security Administration (NNSA) guidance.

One month prior to issuance of the EM memorandum CRADs, the ORP Deputy Manager led an Integrated Safety Management System (ISMS) review of the tank farm prime contractor CH2M HILL. The assessment team included four independent senior technical personnel, one senior ORP facility representative, a member of the Hanford Atomic Trades Council (HAMTC), and an experienced technical editor, and was observed by a member of the Hanford Advisory Board (HAB). This team used the draft EM work planning and control CRADs, and provided feedback to EM and the other site managers on their effectiveness.

The EM WP&C CRADs provided logical evaluation criteria for assessing contractor work control programs and associated DOE and contractor oversight of WP&C. The CRADs addressed each component of a contractor's work control program in a sequence similar to the process for developing work control documents. DOE offices typically do not have formal work control oversight programs

like other safety management programs such as radiological protection, quality assurance, and fire protection. The primary means of WP&C oversight has been through the facility representative program with a focus largely on the implementation of work control documents. The ORP is considering expansion of that focus to include the identification of a WP&C subject matter expert, and incorporation of the EM CRADs into assessment plans and guides.

The EM CRADs could be improved by adding criteria to the DOE and contractor objectives to focus attention on transition activities – such as when work moves from design to construction or construction to operations. As another improvement suggestion, Objective 6, criteria 3 should be expanded to state, “Effective pre-job walk-downs and pre-evolutionary briefings are performed.” Contractors have demonstrated different methods of implementing pre-evolutionary briefings and it is possible that not all workers on a given day would attend the briefing, but a pre-job walk-down by all involved workers each day prior to work would better ensure all workers are more familiar with the tasks and hazard controls.

Overall Evaluation Summary

The ORP and its prime contractors CH2M HILL for the tank farms and BNI for the WTP project were evaluated against the EM CRADs by three different assessment teams, and the results show that whether or not the WP&C objectives were considered met, each organization has several opportunities for improvement (OFI).

For ORP, the assessment team identified three OFIs with a total of six action items.

<u>CRAD #</u>	<u>Objective Met</u>	<u>Objective Partially Met</u>	<u>Objective Not Met</u>	<u>Comments</u>
1	X			Two OFIs Noted
2	X			One OFI Noted

For CH2M HILL, the assessment team identified four OFIs with a total of thirteen action items.

<u>CRAD #</u>	<u>Objective Met</u>	<u>Objective Partially Met</u>	<u>Objective Not Met</u>	<u>Comments</u>
3		X*		No OFIs Noted*
4		X		Two OFIs Noted
5		X		One OFI Noted
6		X		One OFI Noted

* This CRAD objective 3 was determined to be partially met during the team assessment partly because of a finding related to an inadequate hazard analysis. During compilation of this action plan, the OFI to address this finding fit better under the results for CRAD objective 5.

For Bechtel National, Inc., the assessment team identified four OFIs with a total of ten action items.

<u>CRAD #</u>	<u>Objective Met</u>	<u>Objective Partially Met</u>	<u>Objective Not Met</u>	<u>Comments</u>
3		X		One OFI Noted
4		X		One OFI Noted
5		X		One OFI Noted
6		X		One OFI Noted

Each assessment team used different terminology to identify which issues required higher prioritization and thus corrective actions for this action plan, and which issues could be effectively dealt with in the individual organization's corrective action management processes.

The ORP portion of the action plan provides responses to the three "recommendations" in the assessment of ORP WTP oversight. The CH2M HILL portion of the action plan describes actions to address the four "findings" in the ISMS review and leaves the "observations" for tracking and correction in the contractor's Problem Evaluation Request (PER) system. The BNI portion of the action plan provides actions to address the eight "observations" (comparable to "findings" in the CH2M HILL system) in the WP&C assessment and the thirteen "recommendations" (comparable to "observations" in the CH2M HILL system) are to be resolved within the contractor's Recommendations and Issues Tracking System (RITS).

CH2M HILL performs nuclear operations in the Hanford Waste Tank Farms, and engages in the storage, retrieval, and transfer of nuclear waste from the Cold War production of nuclear weapons materials, as well as construction projects improve the tank farm infrastructure and prepare for transfer of the nuclear waste to treatment facilities currently in design and construction. The ISMS assessment team determined that the CH2M HILL ISMS is implemented and, with some exceptions, is effective. Although the tank farm contractor has made significant progress since the October 2004 ISM Improvement Validation Review, additional improvements are warranted to address deficiencies in this most recent assessment and to fully address previously identified findings from the October 2004 and March 2005 reviews.

The CH2M HILL OFIs detail necessary improvements in Unreviewed Safety Question evaluations, the conduct of pre-job walk-downs with the assigned workers, performance of a more integrated project hazard analysis for the C-200 series tank retrievals, and worker compliance to the job hazard analysis controls in a work package.

BNI does not perform nuclear operations and is not currently involved in the storage, handling, processing, or disposal of nuclear materials. Their scopes of work are engineering, procurement, construction and start up/commissioning of the WTP. At this point in the WTP project, BNI's overall safety performance is within the norms for construction work. Their safety performance has been marred in the past by recurring events involving dropped or falling objects in the vicinity of workers and more recently by a series of hazardous energy control lapses. Both now and in the future as construction forces push toward system testing and turnover, BNI recognizes the need to have in place a strong nuclear safety culture and mature systems which will easily transition to the operations phase of the program. The focus is on energized systems and high risk areas of work associated with the construction utilities systems (electrical power distribution, compressed gases, combustible gases, sewer, confined spaces, and excavations).

The BNI OFIs describe the creation of a Central Utilities Group to manage WP&C for "life critical" activities on the systems described immediately above. BNI seeks to increase worker participation in the front end development of job hazard analyses and hazardous work permits as well as in the causal analysis and corrective action development portions of their feedback processes. In

between, BNI will work to improve processes for maintaining up-to-date, understandable work packages with the applicable job hazard analyses included in the package and followed by the construction crafts.

Following submittal of the draft action plan (Letter 06-WTP-004, dated January 12, 2006), ORP contracted with the human performance improvement consultant firm *BushCo* to complete a Human Performance Assessment/Accident Investigation of selected hazardous energy control related occurrence reports from 2005 at the WTP construction site. The investigation took place from January 30 through February 3, 2006. The investigation resulted in one supplemental OFI with two actions related to comparing the investigation results with the causal analyses for the subject occurrence reports and modifying the analyses and corrective actions as appropriate.

(Note: The Feedback and Improvement Site Action Plan attached to ORP letter 06-ESQ-011, dated February 8, 2006, contained one opportunity for improvement with three action items regarding development of a Human Performance Improvement strategic plan, training, and contract direction. Those items are not repeated in this action plan.)

Each organization displayed strengths and these were summarized in Section IV of this action plan. The actions described in this plan will provide greater safety assurance as well as consistently effective job performance.

Action Plan Organization

Sections I-III contain those actions important to improving the effectiveness of WP&C.

Section IV contains WP&C “Good Practices” for sharing across the DOE.

Section V contains the supplemental OFI identified by ORP and the WTP contractor.

SECTION I – DOE Oversight

Performance Objective WPC-1: Work Planning and Control Oversight

Opportunity for Improvement: WPC-ORP-OFI-1

To promote consistent, effective oversight of the contractors, ORP personnel who perform assessments should be qualified per the ORP procedure, and facility representatives should also complete a site-specific qualification process.

ORP Action	Deliverable	Due Date	Owner/Org
a. ORP personnel performing assessments shall document their qualification in accordance with ORP M 220.1, <i>Integrated Assessment Program</i> .	ORP oversight personnel have documented their assessor qualification using the ORP Assessment Qualification Record from ORP M 220.1.	April 30, 2006	Patrick Carier, Office of Environmental Safety and Quality
b. The WTP Project Manager shall issue and approve a WTP facility specific qualification card.	The WTP Project Manager has approved and placed under configuration control the WTP facility specific qualification card.	February 28, 2006	John Eschenberg, WTP Project Manager
c. Facility representatives assigned to the WTP project shall complete cross-qualification to the approved WTP facility specific qualification card.	The assigned WTP facility representatives have completed cross-qualification to the WTP facility specific qualification card.	December 30, 2006	John Eschenberg, WTP Project Manager

Responsible Manager: Shirley Olinger / Deputy Manager, Office of River Protection

Opportunity for Improvement: WPC-ORP-OFI-2

Facility Representative Instructions (FRI) should be updated to reflect expectations for documentation of assigned assessment items, and to reflect the latest program and reference updates.

ORP Action	Deliverable	Due Date	Owner/Org
a. Revise the FRIs to include expectations for the weekly report input related to the performance of surveillances and facility walkthroughs. The FRI should specify the level of detail required to meet the objectives of the Integrated Assessment Program.	Revised Facility Representative Instructions	September 26, 2005	Complete
b. Revise the FRIs to reflect the latest program and reference updates.	Revised Facility Representative Instructions	September 30, 2005	Complete

Responsible Manager: T. Zack Smith / Assistant Manager, Tank Farms Project

Performance Objective WPC-2: Work Planning and Control OversightOpportunity for Improvement: WPC-ORP-OFI-3

ORP should ensure an extent of condition review is conducted for recurring issues, and that corrective action effectiveness is verified.

ORP Action	Deliverable	Due Date	Owner/Org
a. Revise the FRIs to include expectations for performance of extent of condition reviews for recurring issues, and for verification of corrective action effectiveness.	Revised Facility Representative Instructions	March 30, 2006	Mark Brown, Tank Farm Operations Division

Responsible Manager: T. Zack Smith / Assistant Manager, Tank Farms Project

SECTION II – CH2M HILL

Performance Objective WPC-3: Work Control Program Documentation

No opportunities for improvement noted.

Performance Objective WPC-4: Work Planning and Control Activity

Opportunity for Improvement: WPC-CH2-OFI-1

CH2M HILL should ensure the Unreviewed Safety Question (USQ) evaluations are prepared with consideration of ORP-approved safety basis amendments that have not yet been implemented in the tank farms.

CH2M HILL Action	Deliverable	Due Date	Owner/Org
a. Issue a safety basis bulletin to ensure USQ evaluators address safety basis amendments upon ORP approval of the amendments.	Safety basis bulletin issued.	October 13, 2005	Complete
b. Review USQ evaluations conducted between August 5, 2005 and October 13, 2005 to determine potential impacts of safety basis amendments on USQ evaluations.	USQ evaluation review report completed.	October 18, 2005	Complete
c. Revise TFC-ENG-SB-C-01, <i>Safety Basis Issuance and Maintenance</i> , to require safety basis bulletins to be issued upon receipt of the ORP approval of safety basis amendments.	Procedure TFC-ENG-SB-C-01 revised.	December 1, 2005	Complete

d. Issue TFC-CHARTER-33, <i>Safety Basis Change Review Charter</i> .	TFC-CHARTER-33 issued.	December 14, 2005	Complete
e. Train personnel on the revised documents.	Training performed and documented.	March 1, 2006	Ron Stevens, Nuclear Safety and Licensing Director

Responsible Manager: Vic Pizzuto / Senior Vice President, Nuclear Operations

Opportunity for Improvement: WPC-CH2-OFI-2

Tank farm field work organizations should perform final pre-job walk-downs with the work team prior to work execution as required by the work control procedure.

CH2M HILL Action	Deliverable	Due Date	Owner/Org
a. Brief all field work supervisors on walk-down requirements and expectations as noted in TFC-OPS-MAINT-C-01, <i>Tank Farm Contractor Work Control</i> , Section 4.5.1.	Briefing performed and documented.	October 14, 2005	Complete
b. Conduct a follow-up assessment to determine effectiveness.	Follow-up assessment performed and documented.	March 30, 2006	Tony Jennings, Work Planning Director

Responsible Manager: Vic Pizzuto / Senior Vice President, Nuclear Operations

Performance Objective WPC-5: Work Planning and Control Process**Opportunity for Improvement: WPC-CH2-OFI-3**

CH2M HILL should perform a more integrated project hazard analysis for the C-200 series tank retrievals to evaluate the hazards throughout the project life-cycle, to include detailed analysis of equipment disconnect/reconnect when moving the retrieval system from tank to tank.

CH2M HILL Action	Deliverable	Due Date	Owner/Org
a. Perform a supplemental hazard evaluation for the C-200 vacuum retrieval to provide a more integrated project hazard evaluation.	Supplemental hazard evaluation completed and additional controls incorporated into work documents.	November 11, 2005	Complete
b. Append the supplemental hazard evaluation to RPP-17190, <i>Safety Evaluation of the Waste Retrieval Vacuum System for 241-C Tank Farms 200-Series Tanks</i> .	Supplemental hazard evaluation appended to RPP-17190.	December 30, 2005	Complete
c. Revise TFC-ENG-SB-C-06, <i>Safety Basis Development</i> , to require consideration of project life-cycle and detailed analysis of the hazards associated with equipment disconnect/transport/reconnect with the tank farms.	Procedure TFC-ENG-SB-C-06 revised.	December 21, 2005	Complete

Responsible Manager: Vic Pizzuto / Senior Vice President, Nuclear Operations

Performance Objective WPC-6: Work Planning and Control Oversight**Opportunity for Improvement: WPC-CH2-OFI-4**

CH2M HILL should brief tank farm maintenance personnel regarding a work package where job hazard analysis (JHA) controls were not followed. The briefing and follow-on activities should emphasize the importance of familiarity with the JHA and compliance with the hazard controls.

ORP Action	Deliverable	Due Date	Owner/Org
a. Brief maintenance personnel on the unsatisfactory performance of work order WO-05-001346 (workers did not follow controls for use of knives.)	Briefing performed and documented.	November 1, 2005	Complete
b. Counsel personnel who performed WO-05-001346 on the proper use of personal protective equipment.	Counseling performed.	November 1, 2005	Complete
c. Conduct an extent of condition assessment and identify additional corrective actions.	Extent of condition assessment performed and documented and any additional corrective actions entered into the contractor tracking system.	March 30, 2006	Rob Cantwell, Industrial Safety Senior Director

Responsible Manager: Vic Pizzuto / Senior Vice President, Nuclear Operations

SECTION III – BNI

Performance Objective WPC-3: Work Control Program Documentation

Opportunity for Improvement: WPC-BNI-OFI-1

BNI should develop and implement a more comprehensive work planning and control organization to manage construction work involving hazardous energy or conditions, and require subcontractors to work to the site standard process for this type of work.

BNI Action	Deliverable	Due Date	Owner/Org
a. Develop a work control center (as part of the new Central Utilities Group) complete with procedures, staffing, and space to manage work planning and control for "life critical" activities associated with electrical, water, sewer, and gas systems used during construction.	Functioning work control center in the Central Utilities Group.	June 2, 2006	Simon Wright, Central Utilities Group Manager
b. Revise the construction work package process to require construction subcontractors to work to a site standard process.	Revised procedure 24590-WTP-GPP-CON-1201, <i>Construction Work Packages</i> .	March 31, 2006	Scott Neubauer, Field Engineering Manager

Responsible Manager: Mike Lewis / WTP Manager of Construction

Performance Objective WPC-4: Work Planning and Control Activity**Opportunity for Improvement: WPC-BNI-OFI-2**

BNI should revise the hazard analysis and control procedures to increase construction craft participation in development and review of job hazard analyses, to consider the appropriate hierarchy of hazard controls, and to ensure appropriate review of hazardous work permits.

BNI Action	Deliverable	Due Date	Owner/Org
a. Revise procedure 24590-WTP-GPP-SIND-002, <i>Job Hazard Analysis (JHA/Safety Task Analysis Risk Reduction Talk (STARRT))</i> , to increase craft participation in develop and review of hazard analyses.	Revised procedure 24590-WTP-GPP-SIND-002.	March 31, 2006	Jess Hinman, Field Safety Assurance Manager
b. Issue a new procedure for the Central Utilities Group to clearly explain the hierarchy of hazard controls to be applied during development of construction work packages.	Issue and implement the new procedure.	March 31, 2006	Simon Wright, Central Utilities Group Manager
c. Revise procedure 24590-WTP-GPP-SIND-013, <i>Hazardous Work Permit</i> , to require the appropriate reviews from groups such as safety and health, industrial hygiene, and engineering, and to require approval from the appropriate level of construction management to prevent opportunities for single point failures.	Revised procedure 24590-WTP-GPP-SIND-013.	March 31, 2006	Simon Wright, Central Utilities Group Manager

Responsible Manager: Mike Lewis / WTP Manager of Construction

Performance Objective WPC-5: Work Planning and Control Process**Opportunity for Improvement: WPC-BNI-OFI-3**

BNI should implement improved processes for work control documentation.

BNI Action	Deliverable	Due Date	Owner/Org
a. Together with the construction craft, perform an assessment of the current work package process including location of work packages during work, contents of work packages, and ease of use by the crafts, and develop improvement actions.	Assessment completed and documented and improvement actions developed.	March 31, 2006	Mike Hood, Site Superintendent
b. Develop a work package management process to ensure all design documents required for construction work are legible and readily available to the craft.	Work package management process developed, documented, and implemented.	June 2, 2006	Mike Hood, Site Superintendent
c. Revise procedure 24590-WTP-GPP-CON-1201, <i>Construction Work Packages</i> , to ensure JHAs are included with all work packages and are kept current.	Revised procedure 24590-WTP-GPP-CON-1201, <i>Construction Work Packages</i> .	March 31, 2006	Scott Neubauer, Field Engineering Manager

Responsible Manager: Mike Lewis / WTP Manager of Construction

Performance Objective WPC-6: Work Planning and Control Oversight**Opportunity for Improvement: WPC-BNI-OFI-4**

BNI should improve the timeliness of the root cause analysis process to aid in timely reporting of event causes and corrective actions.

BNI Action	Deliverable	Due Date	Owner/Org
a. Revise procedure 24590-WTP-GPP-MGT-015, <i>Root Cause Analysis</i> , to streamline the process and increase employee involvement in problem solving and corrective action development.	Revised procedure 24590-WTP-GPP-MGT-015.	March 31, 2006	Dale Lindsay, Root Cause Analysis Coordinator
b. Increase the availability of trained root cause analysis team leaders.	Additional personnel identified and training conducted.	April 28, 2006	Dale Lindsay, Root Cause Analysis Coordinator

Responsible Manager: Mike Lewis / WTP Manager of Construction

SECTION IV – ORP Site WP&C Good Practices

Good Practice(s)	Site Point of Contact
<p>Good Practice #1: Inspection files produced by the ORP WTP project facility representatives and on-site construction quality inspectors are well maintained. The files contain specific construction activity inspection documentation as well as event reports, investigations, and corrective action follow-up verifications. The detail is sufficient to facilitate effective understanding by independent investigators.</p>	<p>Jim McCormick-Barger, (509) 373-8500</p>
<p>Good Practice #2: The ORP FY2006 Assessment Plan provides an integrated schedule to provide oversight for all areas and groups of the WTP project, including the work control processes.</p>	<p>Pat Carier, (509) 376-3574</p>
<p>Good Practice #3: The CH2M HILL Production, Planning, and Control Group implemented a mature job hazard analysis development process with improved worker involvement. Work planners were retrained to breakdown all jobs to identify activities at the individual task level. This detail proved to be very helpful in group job hazard analysis sessions, because the workers took a greater interest in refining the work steps and identifying all applicable hazards. Furthermore, the radiological planners bring their completed ALARA management worksheets to these group sessions so radiological hazards can be combined with the rest of the hazards into one job hazard analysis document. This enhances worker understanding and compliance with the controls.</p>	<p>Tony Jennings, (509) 373-3447</p>
<p>Good Practice #4: CH2M HILL incorporates a second worker walk-down of the job site after the pre-job briefing and just prior to conducting the work to verify conditions at the job site are as expected and to verify the workers understanding of the work instructions.</p>	<p>Tony Jennings, (509) 373-3447</p>

Good Practice #5: The CH2M HILL Executive Safety Review Board provides an excellent forum for communication of the health of safety programs and management expectations. The Safety Basis Change Review Board provides an effective forum for integrated analysis of safety analysis changes.	Vic Pizzuto, (509) 373-5320
Good Practice # 6: The CH2M HILL tank farm industrial hygiene database provides an excellent tool to make data-driven hazard control determinations.	Rob Cantwell, (509) 373-7209
Good Practice # 7: BNI worker safety standards and expectations are communicated through numerous mechanisms including work crew briefings, peer to peer safe work reinforcement and feedback programs, and lessons learned/safety bulletins.	Jess Hinman, (509) 373-8214
Good Practice #8: The BNI Safety Task Analysis and Risk Reduction Talk (STARRT) card program is a good process for reviewing hazards prior to the commencement of work each day.	Jess Hinman, (509) 373-8214

SECTION V – Supplemental Goals

Supplemental Goal WPC-1: Human Performance Improvement (HPI)

(Note: The Feedback and Improvement Site Action Plan attached to ORP letter 06-ESQ-011, dated February 8, 2006, contains one opportunity for improvement with three action items regarding development of a Human Performance Improvement strategic plan, training, and contract direction. These items will not be repeated here.)

ORP contracted with the human performance improvement consultant firm *BushCo* to complete a Human Performance Assessment/Accident Investigation of selected hazardous energy control related occurrence reports from 2005 at the WTP construction site. The investigation took place from January 30 through February 3, 2006.

Opportunity for Improvement: WPC-ORP-OFI-4

As a follow-up to the Human Performance Assessment/Accident Investigation, ORP and BNI should evaluate the investigation results, compare the results with previous causal analyses for the subject events, and determine if any modified or additional analyses and corrective actions are necessary.

ORP Action	Deliverable	Due Date	Owner/Org
a. Evaluate and compare investigation results with previous causal analyses and upgrade the root cause analysis of the recurring events as appropriate.	Report describing the evaluation and comparison of the existing causal analyses with the Human Performance Assessment/Accident Investigation, and a modified root cause analysis document if appropriate.	March 31, 2006	Mike Thomas, ORP Operations and Commissioning Team Lead Mike Lewis, WTP Manager of Construction
b. Develop any modified or additional corrective actions as appropriate.	Revised or additional corrective actions entered into the contractor's tracking system.	April 28, 2006	Mike Lewis, WTP Manager of Construction

Responsible Manager: John Eschenberg, WTP Project Manager